

## PATENT COOPERATION TREATY

10/018268

PCT

From the INTERNATIONAL BUREAU

NOTIFICATION OF THE RECORDING  
OF A CHANGE(PCT Rule 92bis.1 and  
Administrative Instructions, Section 422)

To:

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| Date of mailing (day/month/year)<br>17 January 2002 (17.01.02) | <b>IMPORTANT NOTIFICATION</b>  |
| Applicant's or agent's file reference<br>73 328 M/Mq.          |  |
| International application No.<br>PCT/EP00/04283                | International filing date (day/month/year)<br>10 May 2000 (10.05.00) |

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## PATENT COOPERATION TREATY

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| <b>International application No.</b><br>PCT/EP00/04283                      | <b>Applicant's or agent's file reference</b><br>73 328 M/Mq.    |
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| <b>Applicant</b><br>BURNS, Gary, P. et al                                   |   |

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PATENT COOPERATION TREATY

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NOTIFICATION OF THE RECORDING  
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From the INTERNATIONAL BUREAU

To:

MEISSNER, P., E.  
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ALLEMAGNE

Date of mailing (day/month/year)

13 November 2001 (13.11.01)

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International application No.

PCT/EP00/04283

IMPORTANT NOTIFICATION

International filing date (day/month/year)

10 May 2000 (10.05.00)

1. The following indications appeared on record concerning:

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☐ the agent

☐ the common representative

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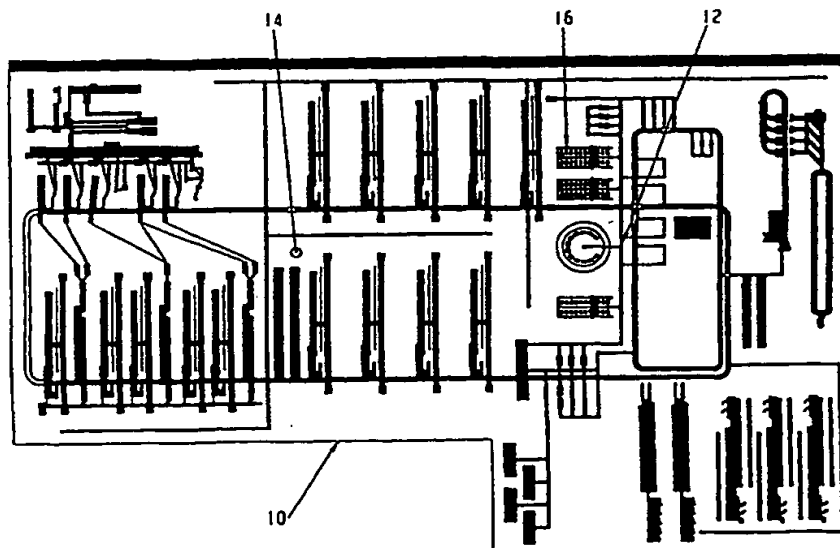
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## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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| <p>(21) International Application Number: PCT/EP00/04283</p> <p>(22) International Filing Date: 10 May 2000 (10.05.00)</p> <p>(30) Priority Data:<br/>60/133,413 11 May 1999 (11.05.99) US</p> <p>(71) Applicant (for all designated States except US): MAN-<br/>NESMANN AG [DE/DE]; Mannesmannufer 2, D-40213<br/>Düsseldorf (DE).</p> <p>(72) Inventors; and<br/>(75) Inventors/Applicants (for US only): BURNS, Gary, P.<br/>[US/US]; 6385 Los Altos Drive, Rockford, MI 49341 (US).<br/>DUBOIS, Matthew, R. [US/US]; 1324 Bentree Drive S.E.,<br/>Grand Rapids, MI 49508 (US).</p> <p>(74) Agent: MEISSNER, P., E.; Meissner &amp; Meissner, Hohen-<br/>zollerndamm 89, D-14199 Berlin (DE).</p> | <p>(81) Designated States: AE, AG, AL, AM, AT, AU, AZ, BA, BB,<br/>BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM,<br/>DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL,<br/>IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU,<br/>LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT,<br/>RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ,<br/>UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH,<br/>GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian<br/>patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European<br/>patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR,<br/>IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF,<br/>CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).</p> <p>Published<br/>With international search report.</p> |   |

(54) Title: DOCK-TO-DOCK RECEIVING AND DISPENSING FOR POSTAL PROCESSING CENTER



## (57) Abstract

The invention relates to a postal processing facility including a sorting system that receives mail in trays and sorts mail to trays and a dock area including a plurality of transportation docks that provide interface with transportation vehicles, comprising: a receiving and dispatching system that loads trays of sorted mail from a sorting system to transportation fixtures and unloads trays of mail to be sorted from transportation fixtures to the sorting system; and wherein said receiving and dispatching system is at the dock area of the postal processing facility thereby providing substantially direct movement of fixtures between transportation vehicles and said receiving and dispatching system.

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5 DOCK-TO-DOCK RECEIVING AND DISPENSING FOR POSTAL PROCESSING  
CENTER

BACKGROUND OF THE INVENTION

10 The present invention is directed to a postal processing facility such as the type which  
processes letter mail, flat mail, such as magazines, and the like, such as by sorting  
mail by zip code or some other convenient index. More particularly, the invention  
relates to the dispatching of trays of sorted mail from a sorting system to transportation  
15 fixtures and the unloading of trays of mail to be sorted from transportation fixtures to  
the sorting system.

A conventional integrated processing facility 10, such as shown in figure 1, includes an  
unloading system 12, which unloads trays, each of which contains incoming letters, flat  
mail, or the like, from transportation fixtures, such as ERMCS rolling carts, or pallets,  
20 or the like, and inducts the containers to a Tray Management System (TMS) which  
feeds the trays to the remaining portion of the mail-sorting system generally illustrated  
at 14. Integrated processing facility 10 additionally includes a loading system 16 which  
receives trays of letters, flat mail, and the like, from mail-sorting system 14 via the TMS  
and loads the letter trays to the transportation fixtures; namely, carts, pallets, or the  
25 like. In the illustrated embodiment, loading system 16 may be of the general type  
disclosed in figure 1 of commonly assigned Patent Cooperation Treaty (PCT) patent  
application Serial No. PCT/EP99/00317 filed January 21, 1999, the disclosure of which  
is hereby incorporated herein by reference. Unloading system 12 may be of the type  
illustrated in figure 2 of said PCT patent application.

30 As can be seen by reference to figure 1, loading system 16 and unloading system 12  
are positioned in an interior portion of integrated processing facility 10. The  
transportation fixtures are received from vehicles, such as semitrailer trucks, at a

loading dock (not shown) which is, by necessity, positioned at a peripheral portion of facility 10. Because the loading dock is at a peripheral portion of facility 10 and loading system 16, and unloading system 12 is at an interior portion of facility 10, it is necessary to transport the transportation fixtures a significant distance between the loading system 16, unloading system 12, and the loading dock. This has traditionally been carried out by manual movement of the carts and forklift transportation of pallets. Recently, it has been suggested to use Automatic-Guided Vehicles (AGVs) to move the transportation fixtures between the loading dock, loading system 16 and unloading system 12. This transportation creates additional processing time and capital expenditures, thereby adding to the cost of mail processing. Furthermore, such prior art processing facility is inefficient in equipment utilization. Trucks with incoming mail would be positioned at a dock space relatively close to unloading system 12 in order to deliver incoming trays and then be repositioned at another dock space closer to loading system 16 in order to receive outgoing mail. Furthermore, unloading system 12 is utilized during a relatively short period of time as illustrated by the portion designated "RCS Dispatch Only" in figure 11. Likewise, loading system 16 is utilized only during a relatively small portion of the schedule indicated by "outgoing mail volume" in figure 11. Accordingly, equipment utilization both within facility 10 and adjunct to facility 10 is relatively low.

## **SUMMARY OF THE INVENTION**

The present invention provides a postal processing facility receiving and dispatch system that eliminates the necessity for unloading to and dispatching from internal portions of the facility. The present invention furthermore combines the use of equipment in a manner that utilizes the equipment throughout the processing day. The present invention also eliminates the necessity for dedicated input doors and output doors at the loading dock. Therefore, trucks do not need to be moved between input doors and output doors, thereby simplifying the handling of trucks in the yard.

These and other objects, advantages, and features of this invention will become apparent upon review of the following specification in conjunction with the drawings.

#### BRIEF DESCRIPTION OF THE DRAWINGS

5 Fig. 1 is a top plan view of an integrated processing facility provided by the prior art;  
Fig. 2 is a top plan view of an integrated processing facility according to the invention;  
Fig. 3 is an enlarged portion of the area indicated by III in Fig. 2;  
Figs. 4a and 4b are illustrations of a process for loading and unloading trays of mail  
10 between a vehicle and a sorting system according to the invention;  
Fig. 5 is a top plan view of the area indicated by V in Fig. 3;  
Fig. 6 is a side elevation of the view indicated by VI-VI in Fig. 5;  
Fig. 7 is a sectional view taken along the lines VII-VII in Fig. 5;  
Fig. 8 is a side elevation of the lifter mechanism in Fig. 7;  
15 Fig. 9 is a sectional view taken along the lines IX-IX in Fig. 5;  
Fig. 10 is a perspective view of the robot in Fig. 9; and  
Fig. 11 is a diagram illustrating daily mail volume in an integrated processing facility.

#### DESCRIPTION OF THE PREFERRED EMBODIMENT

20 Referring now specifically to the drawings, and the illustrative embodiments depicted therein, a postal processing system 20 includes a building 22 having a loading dock 24 which, as is traditional, includes a plurality of loading doors and another traditional dock facility (not shown) to accommodate vehicles 26 which, in the illustrated  
25 embodiment, are semitrailer trucks. Alternatively, vehicles 26 could be train cars, vans, or the like. As is conventional, postal processing facility 20 includes a mail-sorting system 28, including a Tray Management System (TMS) 30, which conveys and sorts trays between a series of mail-sorting machines, generally shown at 32.

30 Postal processing facility 20 additionally includes a receiving and dispatching system 34 that loads trays of sorted mail from TMS 30 to transportation fixtures, such as ERMCS carts, pallets, or the like, and unloads trays of mail to be sorted from



transportation fixtures to TMS 30. Receiving and dispatching system 34 is made up of a plurality of receiving and dispatching cells 36, each of which is interconnected with a sortation conveyor 38, as will be described in more detail below. Each receiving and dispensing cell 36 is capable of loading trays of sorted mail to transportation fixtures and unloading trays of mail from transportation fixtures. This eliminates the necessity for separate loading systems and unloading systems which, as previously set forth, are poorly utilized throughout the processing day. Advantageously, receiving and dispensing cells 36 are at loading dock 24. This eliminates the necessity for a transportation system to transport the transportation fixtures between the loading dock and an interior portion of the processing facility. Furthermore, each vehicle 26 may remain positioned at a single loading/unloading door with transportation fixtures removed from the vehicle, the trays of sorted mail removed from the transportation fixtures, the trays of sorted mail loaded to transportation fixtures, and the transportation fixtures loaded to the vehicle 26 without having to move the vehicle 26 between an unloading door and a separate loading door.

Receiving and dispatching cell 36 includes a sortation conveyor 38 having a main line 40 which, preferably, is a recirculating continuous loop (Fig. 5). A plurality of spurs 42 extend from main line 40 to a receiving and dispatching assembly 44. Sortation conveyor 38 is elevated with respect to each receiving and dispatching assembly 44 wherein trays are lowered from sortation conveyor 38 by a mechanism, such as a gravity chute 46 (Fig. 6).

Each receiving end dispatching assembly 44 includes a plurality of cart positioners 48 and a transport mechanism 50 for transporting mail trays between spur 42 and each cart positioner 48. Spur 42 includes a powered roller conveyor 52 which extends the length of receiving and dispatching assembly 44. In the illustrated embodiment, transportation mechanism 50 is a robot of the type manufactured by Fanuc products under Model M710i. It should be understood that transport mechanism 50 could alternatively be of the type disclosed in PCT patent application Serial No. PCT/EP99/00317 filed January 21, 1999, for a HIGH THROUGHPUT DISPATCH SYSTEM FOR MAIL PROCESSING AND DISTRIBUTION SYSTEM, the disclosure of

which is hereby incorporated herein by reference, suitably modified to be capable of unloading carts as well as loading carts. Preferably, receiving and dispatching assembly 44 is enclosed with an enclosure 54, such as a fence, in order to keep personnel from the operation of transport mechanism 50. Enclosure 54 includes a moveable gate 56 at each cart positioner 48 which can be selectively opened to allow transportation fixtures to be loaded or unloaded to the receiving and dispatching assembly 44. Advantageously, this arrangement allows receiving and dispatching system 34 to continue to operate even though a particular receiving and dispatching cell is having a cart replaced because only one cell is locked out at a time.

Powered roller conveyor 52 includes a lift mechanism 58 at strategic locations along the powered roller conveyor. Lift mechanism 58 (Fig. 7) includes a plurality of support fingers 60 which are selectively elevated by a lift assembly 62 when a tray is positioned over the lift mechanism. A pair of positioning arms 64 serve to center the tray over the lift mechanism. When lift mechanism 58 is actuated, the tray is elevated in order to allow transport mechanism 50 to engage the tray from either a lateral side direction or an end longitudinal direction. This allows the transport mechanism to position each tray 73 328 on a cart in either of two orthogonally related positions. This allows trays to be staggered on the cart in alternating patterns in order to increase security of cart loading. Receiving and dispatching assembly 44 additionally includes a half tray support 66 adjacent cart positioner 48. This provides a staging area for transport mechanism 50 to position half trays during the loading of a cart. If transport mechanism 50 comes across another half tray, then the two half trays can be positioned together in order to provide the same profile as a full tray. This avoids any instability caused by the placement of a half tray on a cart.

In the illustrative embodiment, transport mechanism 50 includes a robot arm 70 which terminates in an end-effector, or an end-of-arm tool, 72. Transport mechanism 50 additionally includes a transporter 82 having legs which span powered roller conveyor 52 and any mail tray on the powered roller conveyor 52. End-effector 72 includes a tray support in the form of a series of tines 74 and a clamp member 76 for clamping a tray against the tray support 74. Endeffector 72 additionally includes a pusher/grabber

mechanism 78 which pushes trays from tray support 74 concurrently with end effector 72 being withdrawn from the cart. Alternatively, pusher/grabber 78 engages a hand opening (not shown) in the side of a tray in order to pull a tray onto tray support 74. In order to facilitate the loading and unloading of trays onto tray support 74, one or more, preferably two or more, sensors, such as imaging sensors 80, are positioned on the end of tray support 74.

Receiving and dispensing system 34 operates as follows. In order to load trays of sorted mail to transportation fixtures, trays are diverted onto spur 42 by a diverter, such as a conventional pop-up rotating-belt diverter or the like, and travel down chute 46 under gravity. The tray is transported by powered roller conveyor 52 to an appropriate position for transporting by transport mechanism 50. This is accomplished by lift mechanism 58 elevating the tray and end-effector 72 of transport mechanism 50 engaging the tray from the appropriate direction according to the need of the cart being loaded. The tray is grasped between clamp mechanism 76 and tray support 74 and is positioned on the appropriate cart. This may be accomplished by transporter 82 traveling in the direction of conveyor 52. As previously set forth, trays are loaded onto carts utilizing pusher/grabber 78 to strip the tray from tray support 74. When a cart is full, the associated gate 56 is opened which shuts down the respective cell 36 while that cart is loaded onto a vehicle 26 located at an adjacent door. The cart is replaced with an empty cart and gate 56 is closed allowing the respective cell to resume operation.

In a mode in which trays are unloaded from transportation fixtures, the full fixture is positioned on a cart positioner 48 and gate 56 is closed. Transport mechanism 50 causes endeffector 72 to individually engage the trays on the cart to be unloaded. Pusher/grabber 78 is extended under the guidance of imaging sensors 80 into engagement with an opening in the side of the tray. The pusher/grabber 78 is retracted pulling the tray onto tray support 74. Clamp member 76 clamps the tray against tray support 74. Transport mechanism 50 places the cart on lift mechanism 58 in the proper orientation. Lift mechanism 58 retracts causing the tray to be properly positioned on powered roller conveyor 52. Powered roller conveyor 52 includes a powered incline

portion 52a which conveys the unloaded tray onto TMS 30 by conveying the tray uphill onto a receiving portion of sortation conveyor 38. Alternatively, it would be possible to have chute 46 replaced with a powered roller conveyor that is capable of operation in both directions such that trays being unloaded are transported upwardly away from the  
5 respective receiving and dispatching assembly. The rollers are reversed and the conveyor transported in the opposite direction to receive trays for loading onto the carts.

As can be seen by references to figures 4a and 4b, the invention can be utilized in  
10 different ways to dispatch and receive trays. Figure 4a shows three receiving and displaying cells 36 designated 1, 2, and 3. In this example, cell 1 is full of carts received from a vehicle, cell 2 is full of empty carts and cell 3 is full of carts ready for dispatch. As the carts are unloaded in cell 3, they are available for use in cell 2 which then becomes a receiving cell. As full receiving carts are removed from cell 1, they can  
15 then become a dispatch cell and replaced with full carts for dispatching. Figure 4b shows an alternative method in which individual positions within each of the cells 1, 2, and 3 are utilized as either receiving positions, dispatch positions, or empty positions. Because of the capability of the computer system (not shown) controlling the receiving and dispatching system, the function of each cart position can be determined and  
20 monitored.

As can be seen in figure 11, the present invention provides a receiving and dispatching system which is more fully utilized throughout the processing day thereby ensuring a more effective return on investment. During period A, mail is received from the trucks  
25 and processed by mail-sorting system 28. During period B, the processed mail is dispatched utilizing receiving and dispatching system 34. During period C, mail which arrives occasionally on vehicles 26 can be received as it arrives. Any remaining mail is dispatched at D.

## Claims

1. A postal processing facility including a sorting system that receives mail in trays and sorts mail to trays and a dock area including a plurality of transportation docks that provide interface with transportation vehicles, comprising:  
5 a receiving and dispatching system that loads trays of sorted mail from a sorting system to transportation fixtures and unloads trays of mail to be sorted from transportation fixtures to the sorting system; and wherein said receiving and dispatching system is at the dock area of the postal processing facility thereby providing substantially direct movement of fixtures between transportation  
10 vehicles and said receiving and dispatching system.
2. The postal processing facility of claim 1 wherein said receiving and dispatching system includes at least one receiving and dispatching assembly that is adapted to both unload transportation fixtures and load transportation fixtures.  
15
3. The postal processing facility of claim 2 including a plurality of said receiving and dispatching assemblies, a sortation conveyor having a main line defined by a conveying surface and a plurality of spurs, extending from said mail line to said receiving and dispatching assemblies.  
20
4. The postal processing facility of claim 3 wherein said spurs include separate spur lines for moving trays from said sortation conveyor to the receiving and dispatching assemblies and for moving trays from said receiving and dispatching assemblies to said sortation conveyor.  
25
5. The postal processing facility of claim 3 wherein said conveying surface is a continuous loop.
6. The postal processing facility of claim 3 wherein said conveying surface is  
30 elevated with respect to said receiving and dispatching assemblies.
7. The postal processing facility of claim 3 including individual enclosures around said receiving and dispatching assemblies with a moveable gate that can be

selectively opened to allow other transportation fixtures in other receiving and dispatching assemblies to be loaded or unloaded while one transportation fixture is being removed.

- 5        8.     The postal processing facility of claim 1 wherein said transportation fixtures are wheeled carts.
9.     A postal processing facility including a sorting system that receives mail in trays and sorts mail to trays, comprising:
- 10       a receiving and dispatching system that loads trays of sorted mail from a sorting system to transportation fixtures and unloads trays of mail to be sorted from transportation fixtures to the sorting system; and wherein said receiving and dispatching system includes at least one receiving and dispatching assembly that is adapted to both unload transportation fixtures and load transportation fixtures.
- 15
10.    In a postal processing facility including a sorting system that receives mail in trays and sorts mail to trays and a dock area including a plurality of transportation docks that provide interface with transportation vehicles, a method of receiving trays of mail from transportation fixtures and dispatching trays of
- 20       mail to transportation fixtures, comprising:
- providing at least one of a dispatching system that loads trays of sorted mail from a sorting system to transportation fixtures and a receiving system that unloads trays of mail to be sorted from transportation fixtures to the sorting system;
- 25       positioning said at least one of a receiving and dispatching system at the dock area of the postal processing facility; and substantially directly moving fixtures between transportation vehicles and said at least one of a receiving and dispatching system.
- 30       11.    The method of receiving and dispatching trays in claim 10 including providing a dispatching system and a receiving system and positioning both said receiving and said dispatching system at said dock area.

12. In a postal processing facility including a sorting system that receives mail in trays and sorts mail to trays, a method of receiving trays of mail from transportation fixtures and dispatching trays of mail to transportation fixtures, comprising:
- 5       providing a receiving and dispatching system;  
      loading trays of sorted mail from a sorting system to transportation fixtures and unloading trays of mail to be sorted from transportation fixtures to the sorting machine; and  
      wherein said loading and unloading include commonly loading and unloading
- 10       with a common system.
13. The method of receiving and dispatching in claim 12 including providing a receiving and dispatching system having a transport mechanism adapted to load trays of mail to transportation fixtures and unload trays of mail from the
- 15       transportation fixtures.
14. The method of receiving and dispatching in claim 13 including providing a plurality of said transport mechanisms.
- 20       15. The method of receiving and dispatching in claim 14 including loading trays of mail to transportation fixtures with ones of said transport mechanism and unloading trays of mail from the transportation fixtures with others of said transport mechanisms.
- 25       16. The method of receiving and dispatching in claim 14 including loading trays of mail to transportation fixtures and unloading trays of mail from transportation fixtures with substantially all of said transport mechanisms.

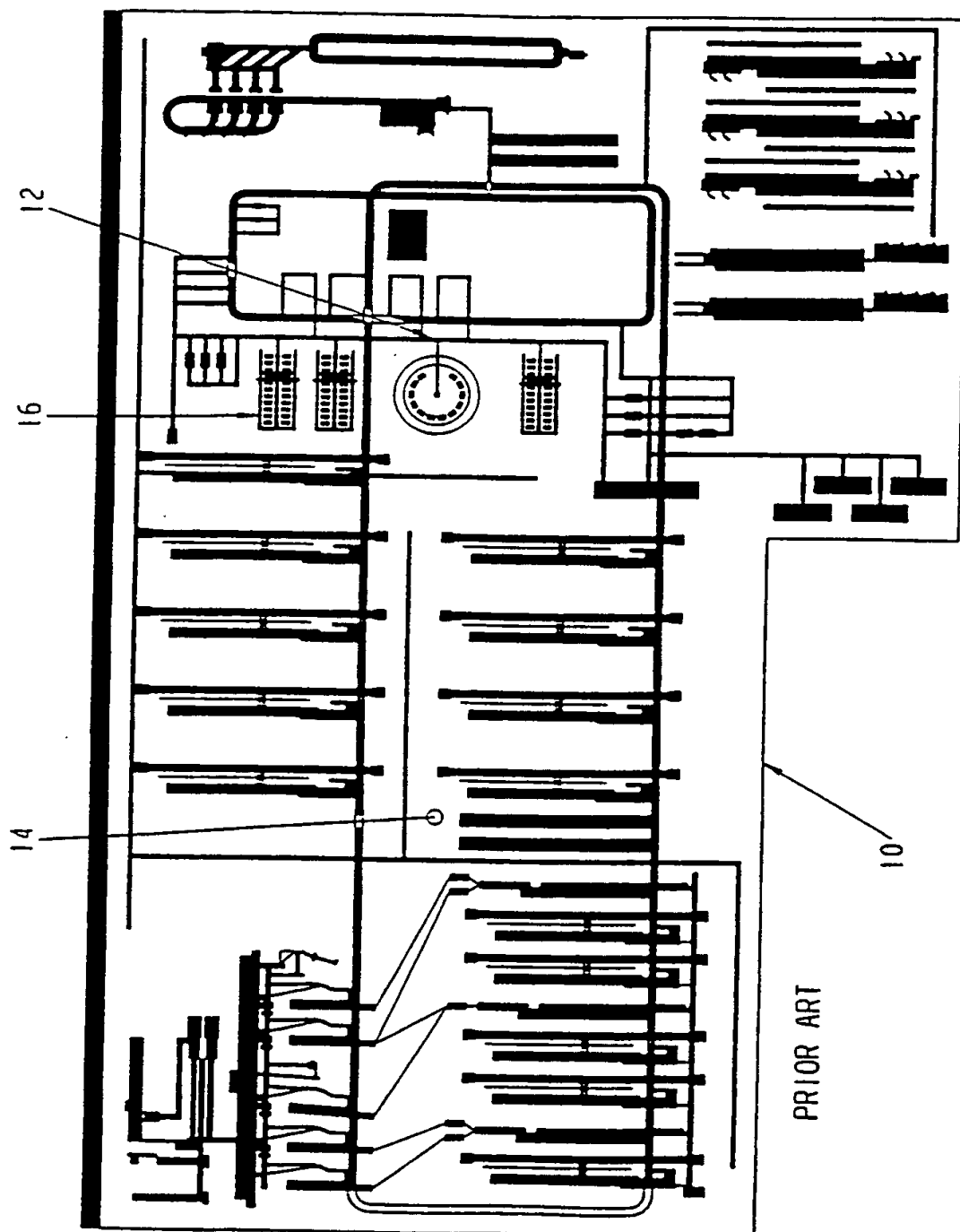


Fig. 1



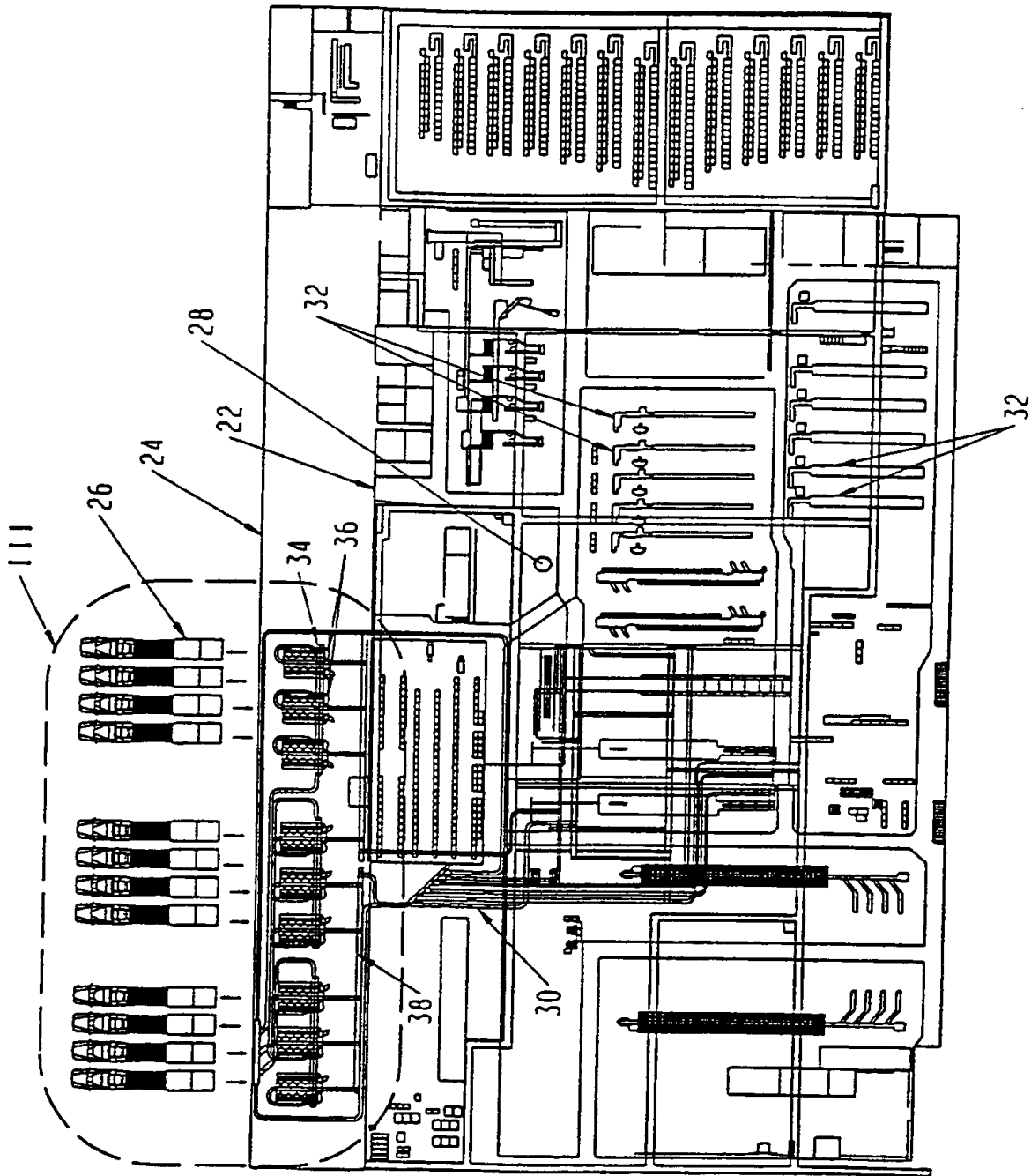


Fig. 2

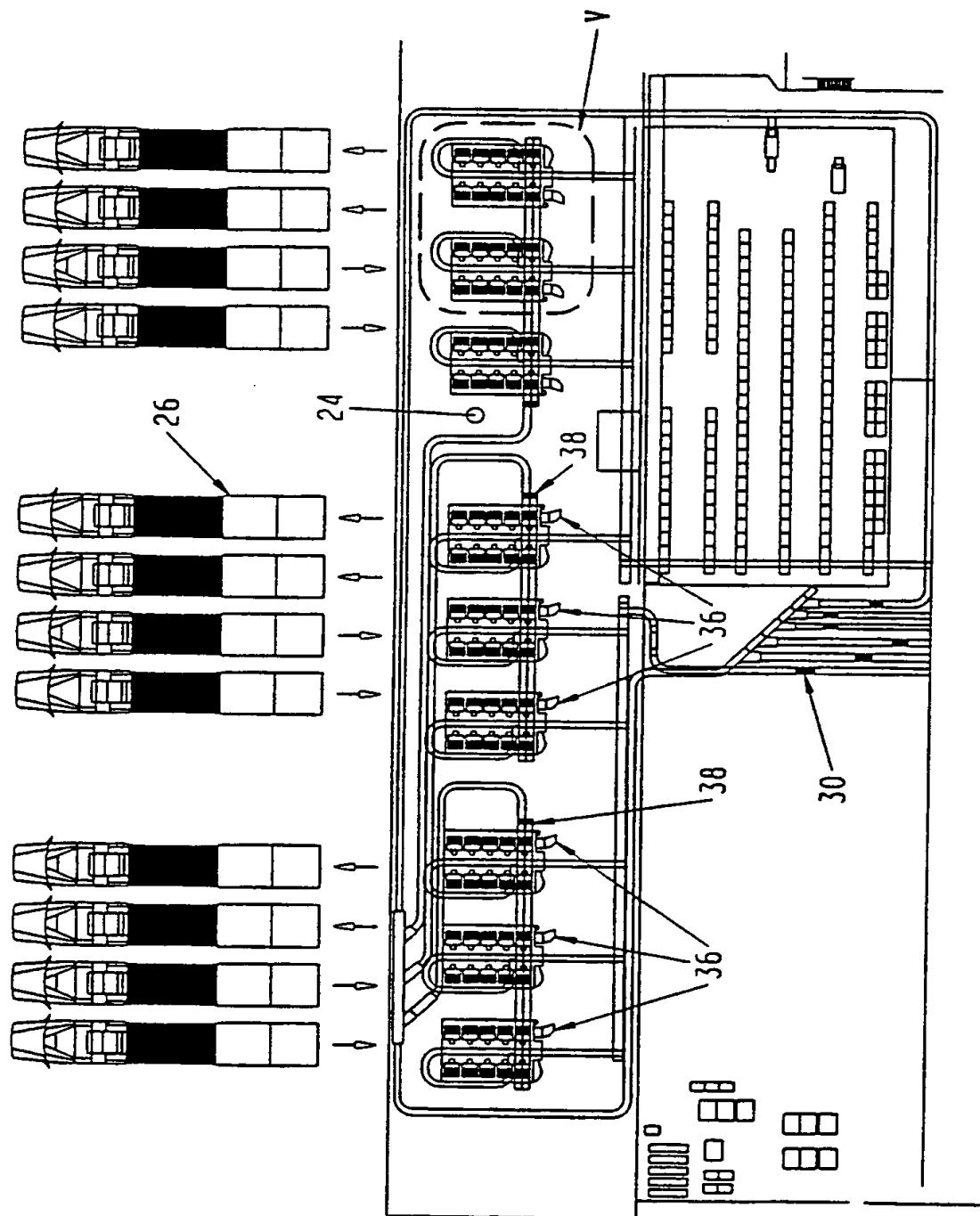
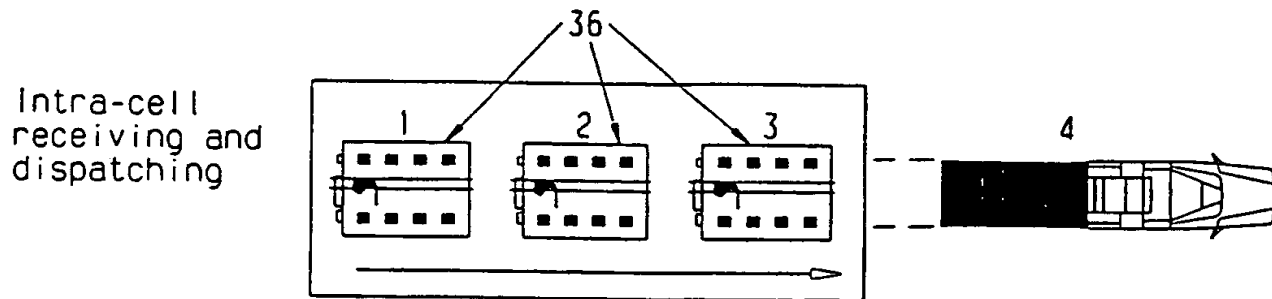
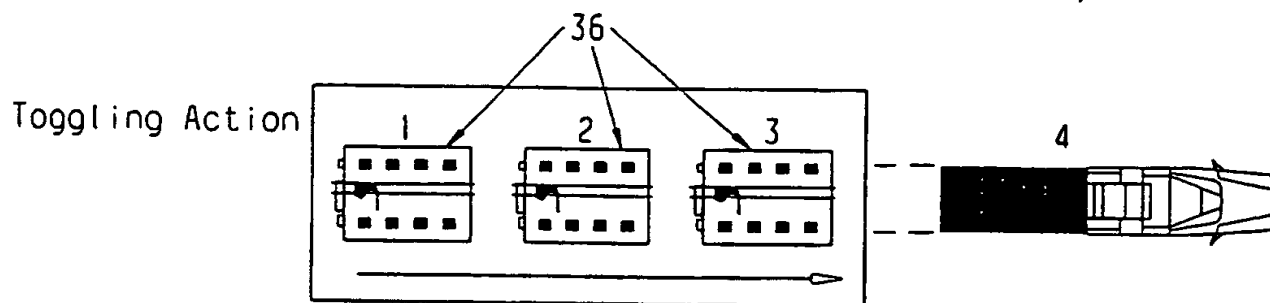


Fig. 3

4/10

Fig. 4bFig. 4a**10**

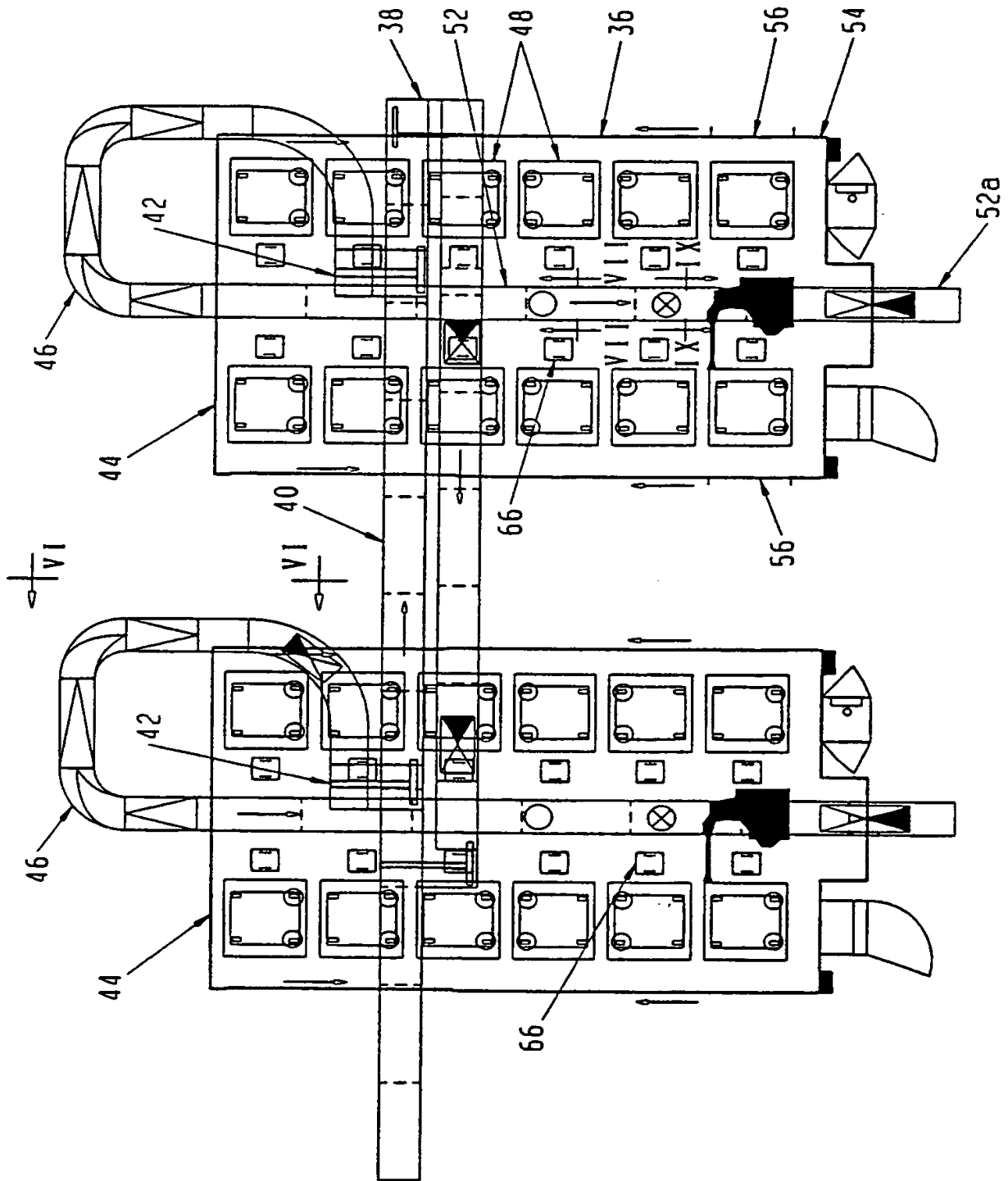


Fig. 5

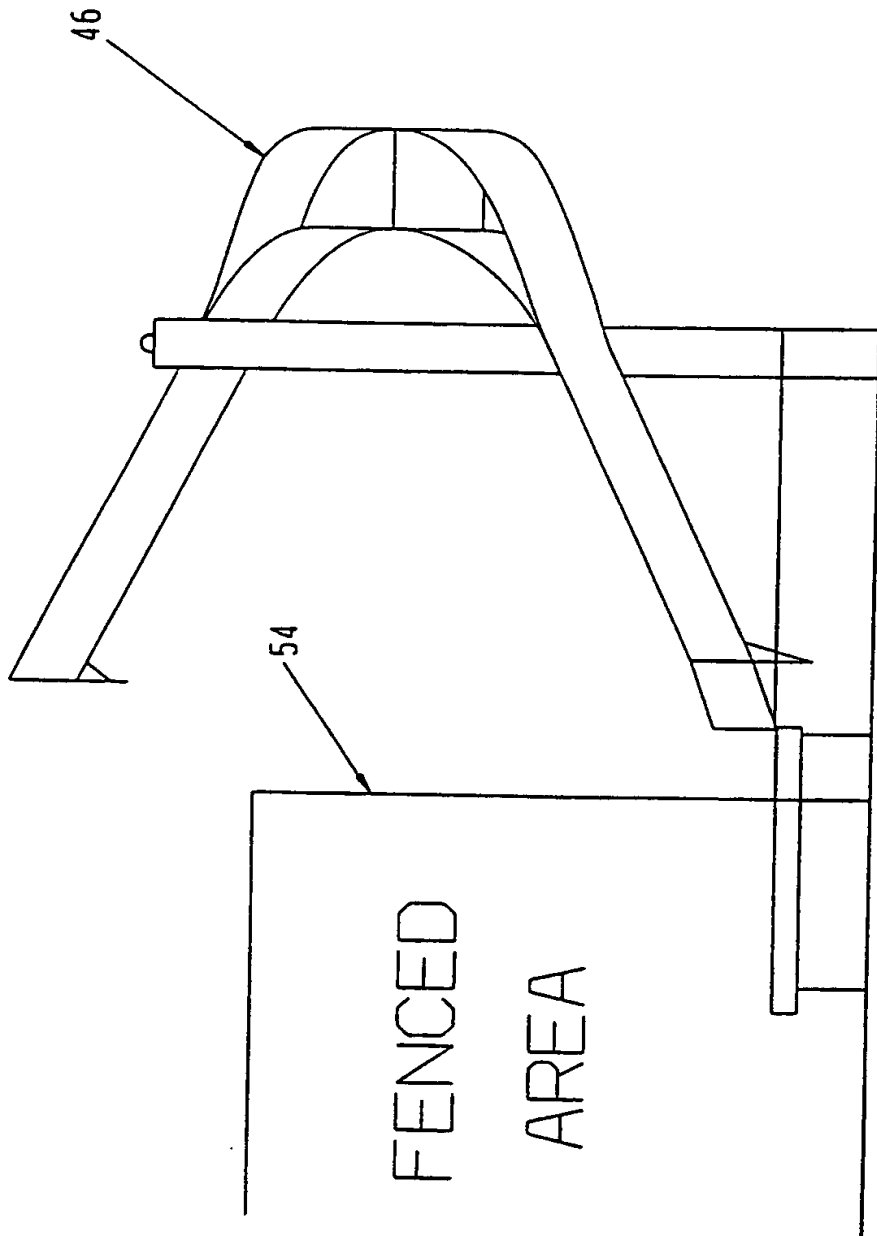


Fig. 6

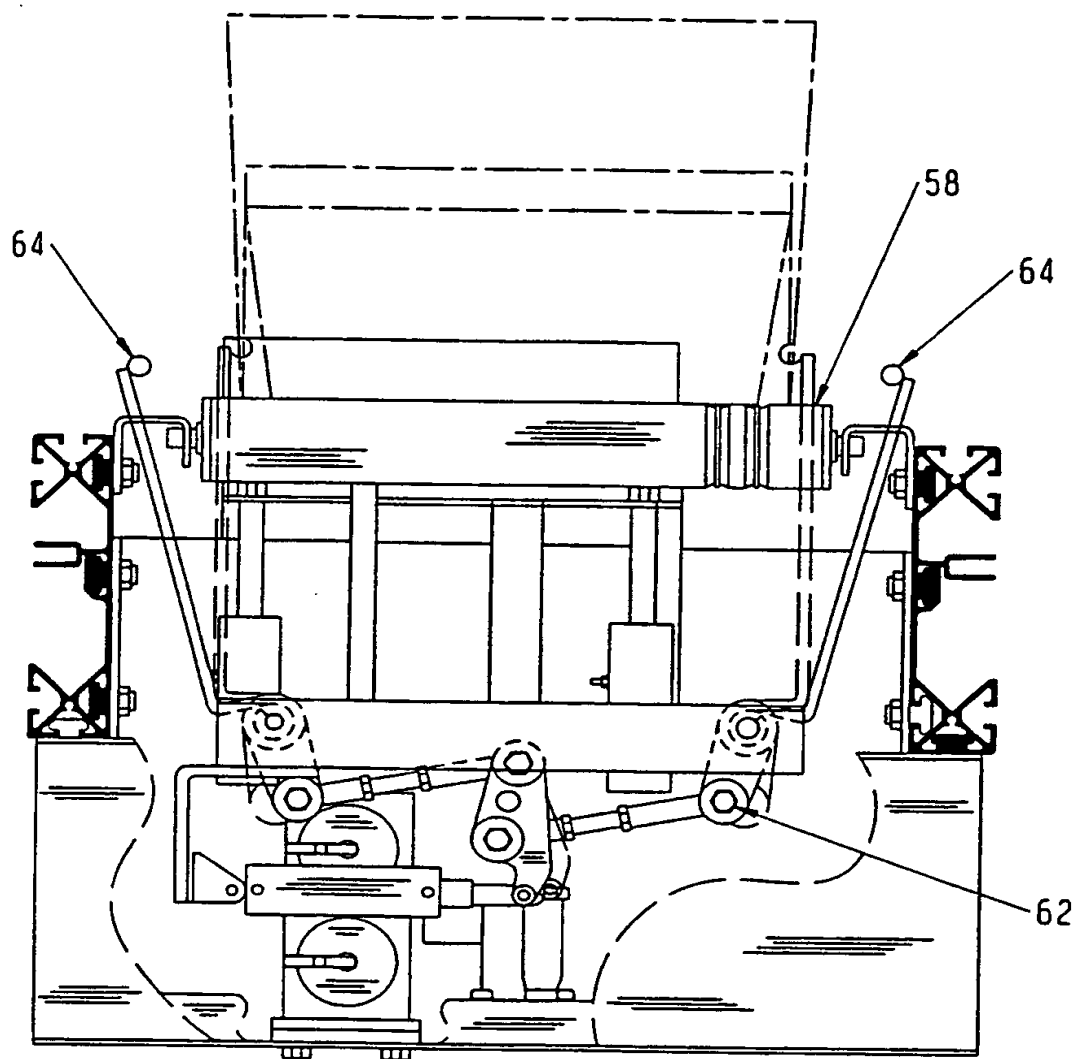


Fig. 7

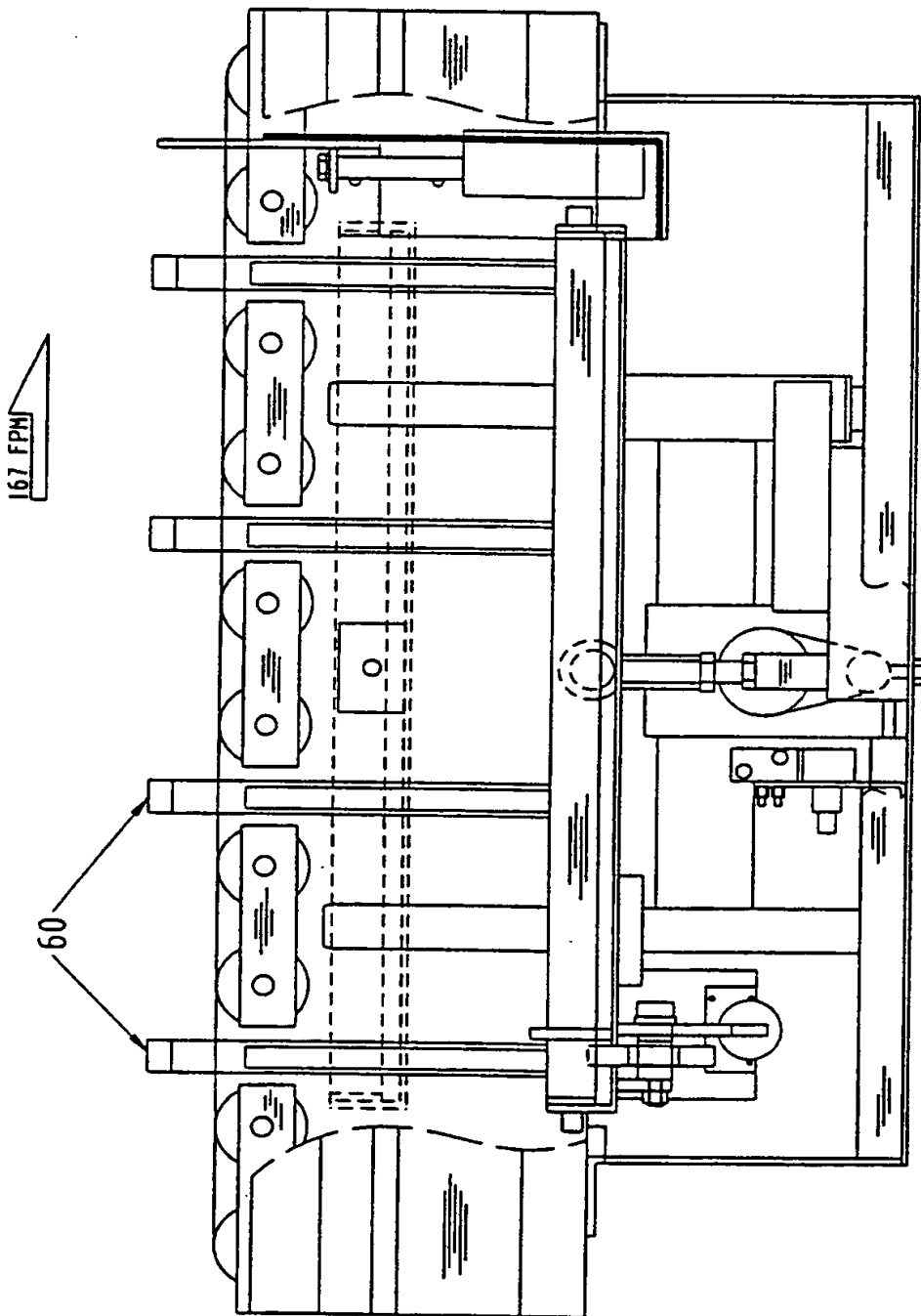


Fig. 8

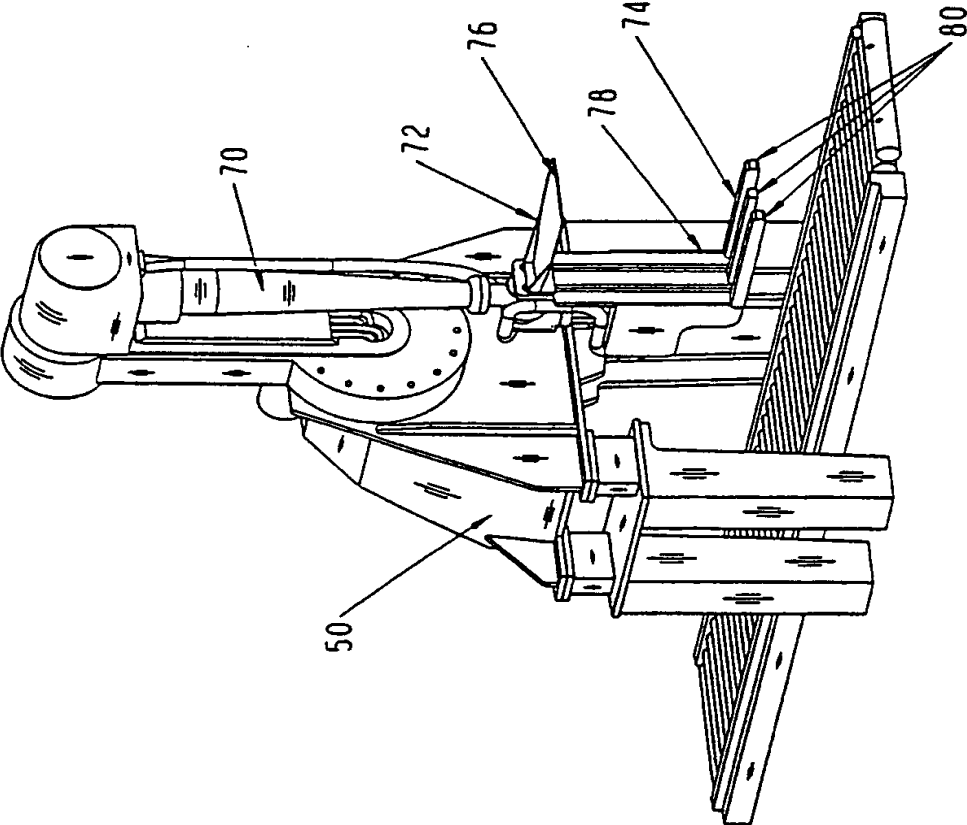


Fig. 10

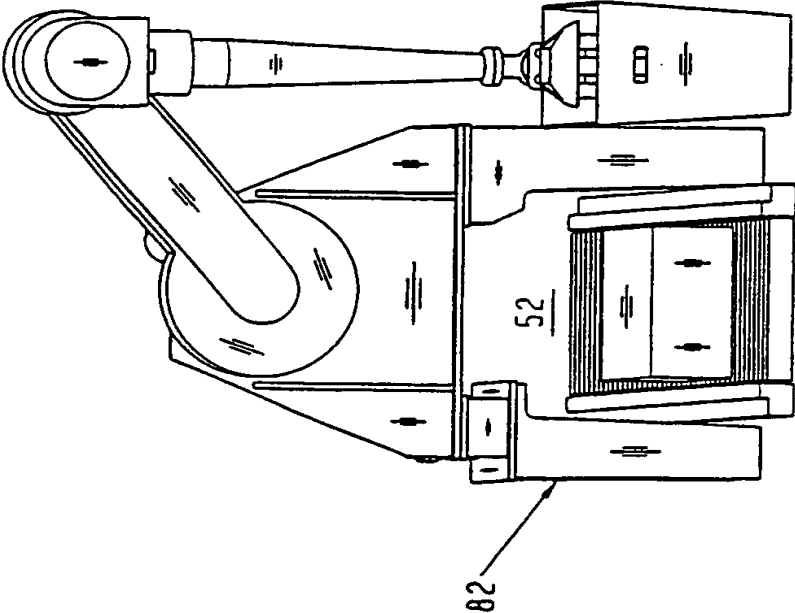


Fig. 9



Daily Mail Volumes in a Typical USPS  
Processing & Distribution Center

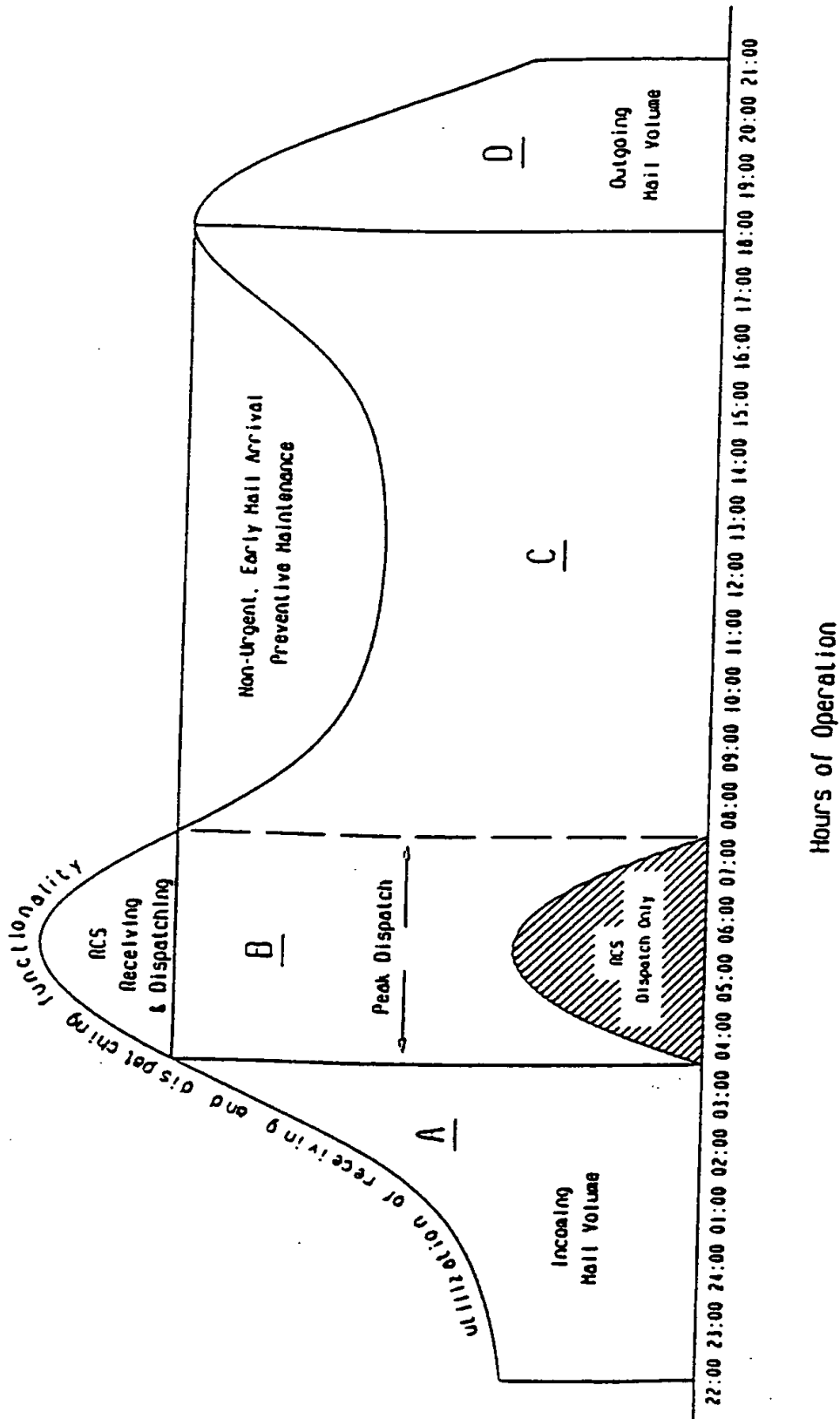


Fig. 11

# PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

|  |   |  |
|--|---|--|
| Applicant's or agent's file reference<br><b>73 328 M/Mq.</b> | <b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below. |  |
| International application No.<br><b>PCT/EP 00/ 04283</b>     | International filing date (day/month/year)<br><b>10/05/2000</b>   | (Earliest) Priority Date (day/month/year)<br><b>11/05/1999</b> |
| Applicant<br><b>MANNESMANN AG</b>                            |   |  |

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 02 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

### 1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

01

☐ None of the figures.

# INTERNATIONAL SEARCH REPORT

Inter: ☐ Nat: ☐ Application No

PCT/EP 00/04283

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 B07C3/00

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B07C B65G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

| Category * | Citation of document, with indication, where appropriate, of the relevant passages   | Relevant to claim No. |
|------------|--|-----------------------|
| P, A       | WO 99 37411 A (MANNESMANN AG ; KLEIN HANS J (DE); DEVRIES CHARLES R (US); YOUNG BR)<br>29 July 1999 (1999-07-29)<br>cited in the application<br>the whole document | 1-16                  |
| A          | WO 97 09132 A (GRAPHIA HOLDING AG ; OPPLIGER JEAN CLAUDE (CH); BOLLER MANFRED (DE))<br>13 March 1997 (1997-03-13)<br>the whole document                            | 1-16                  |

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

\* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

15 August 2000

Date of mailing of the international search report

01/09/2000

Name and mailing address of the ISA

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Authorized officer

Ostyn, T

# INTERNATIONAL SEARCH REPORT

information on patent family members

Inter Application No

PCT/EP 00/04283

| Patent document<br>cited in search report |   | Publication<br>date | Patent family<br>member(s) |            | Publication<br>date |
|---|---|---------------------|----------------------------|------------|---------------------|
| WO 9937411                                | A | 29-07-1999          | AU                         | 2619599 A  | 09-08-1999          |
| WO 9709132                                | A | 13-03-1997          | AU                         | 719386 B   | 11-05-2000          |
|   |   |                     | AU                         | 6730496 A  | 27-03-1997          |
|   |   |                     | EP                         | 0790864 A  | 27-08-1997          |
|   |   |                     | JP                         | 10509094 T | 08-09-1998          |
|   |   |                     | US                         | 5959868 A  | 28-09-1999          |

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PCT

To:

Meissner, P. E.  
MEISSNER ; PRESTING ; HENZE  
Hohenzollerndamm 89  
D-14199 Berlin  
ALLEMAGNE

EINGEGANGEN

03. AUG. 2001

MEISSNER + MEISSNER

NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT

(PCT Rule 71.1)

Date of mailing  
(day/month/year) 01.08.2001

Applicant's or agent's file reference  
73 328 M/Mq.

IMPORTANT NOTIFICATION

International application No.  
PCT/EP00/04283

International filing date (day/month/year)  
10/05/2000

Priority date (day/month/year)  
11/05/1999

Applicant  
MANNESMANN AG

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/



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Authorized officer

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# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

|  |   |  |  |
|--|---|--|--|
| Applicant's or agent's file reference<br><b>73 328 M/Mq.</b>   |   | <b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)  |  |
| International application No.<br><b>PCT/EP00/04283</b>   | International filing date (day/month/year)<br><b>10/05/2000</b> | Priority date (day/month/year)<br><b>11/05/1999</b>  |  |
| International Patent Classification (IPC) or national classification and IPC<br><b>B07C3/00</b>  |   |  |  |
| Applicant<br><b>MANNESMANN AG</b>  |   |  |  |
| <p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of 3 sheets.</p>   |   |  |  |
| <p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <li>I <input checked="" type="checkbox"/> Basis of the report</li> <li>II <input type="checkbox"/> Priority</li> <li>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</li> <li>IV <input type="checkbox"/> Lack of unity of invention</li> <li>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li> <li>VI <input type="checkbox"/> Certain documents cited</li> <li>VII <input checked="" type="checkbox"/> Certain defects in the international application</li> <li>VIII <input checked="" type="checkbox"/> Certain observations on the international application</li> </ul> |   |  |  |
| Date of submission of the demand<br><br><b>05/12/2000</b>  |   | Date of completion of this report<br><br><b>01.08.2001</b>   |  |
| Name and mailing address of the international preliminary examining authority:<br> <b>European Patent Office</b><br><b>D-80298 Munich</b><br><b>Tel. +49 89 2399 - 0 Tx: 523656 epmu d</b><br><b>Fax: +49 89 2399 - 4465</b>  |   | Authorized officer<br><br><b>Stenger, M</b><br><br>Telephone No. <b>+49 89 2389 7353</b>  |  |

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/EP00/04283

**I. Basis of the report**

1. With regard to the elements of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):
- Description, pages:

1-7 as originally filed

**Claims, No.:**

1-16 as received on 14/05/2001 with letter of 14/05/2001

**Drawings, sheets:**

1/9-9/9 as originally filed

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/EP00/04283

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):  
*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

|                               |                  |
|-------------------------------|------------------|
| Novelty (N)                   | Yes: Claims 1-16 |
|                               | No: Claims       |
| Inventive step (IS)           | Yes: Claims 1-16 |
|                               | No: Claims       |
| Industrial applicability (IA) | Yes: Claims 1-16 |
|                               | No: Claims       |

**2. Citations and explanations**  
**see separate sheet**

**VII. Certain defects in the international application**

The following defects in the form or contents of the international application have been noted:  
**see separate sheet**

**VIII. Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:  
**see separate sheet**



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/EP00/04283

**Section V:**

1.) Claims 1, 9, 10 and 12:

A clarity objection concerning claim 12 has been raised (see section VIII). The following analysis has been carried out as if this objection had been overcome.

The closest prior art is described in the application itself (p.1, l.17-29; fig.1). Figure 1 shows a postal processing facility 10 comprising a receiving and dispatching system 12, 16 comprising a receiving assembly 12 and a dispatching assembly 16.

The subject-matter of each of claims 1, 9, 10 and 12 differs therefrom, in that the receiving and dispatching system includes at least one receiving and dispatching assembly, that is adapted to **both load and unload** transportation fixtures. Thereby, loading and unloading includes commonly loading and unloading with a common system.

This has the advantage, that the necessity for dedicated input and output doors (p.2, l.27- 28) and of moving trucks between these different doors is eliminated. Furthermore, the common system is utilized during a larger portion of the schedule, thus making equipment utilization more efficient (p.2, l.10-19).

Such an assembly is not suggested by the available prior art documents; WO-A1-9709132 discloses a postal processing facility 10 including a sorting system 12, 14 and a dispatching system (see figure 1), that conveys trays to a place exterior of the facility. Thus, the subject-matter of claims 1, 9, 10 and 12 has to be regarded as involving an inventive step.

2.) Dependent claims:

Claims 2 to 8, 11 and 13 to 16 comprise all the features of either claim 1, 10 or 12 and are therefore also new and inventive.

3.) Industrial applicability:

The industrial applicability of the invention is obvious.

**Section VII:**

1.) The new independent claims are not correctly limited against the closest prior art

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/EP00/04283

as presented on p.1, l.17-25, as required by Rule 6.3(b). Neither is a document disclosing these features cited in the description, (Rule 5.1(a)(ii) PCT).

- 2.) The relevant prior art known from WO-A1-9709132 is not cited in the description (Rule 5.1(a)(ii) PCT).

**Section VIII:**

- 1.) Independent claim 12 discloses **"commonly loading and unloading with a common receiving and dispatching assembly"**. However, throughout the description and in claims 2 and 9, the term **"receiving and dispatching assembly adapted to both load and unload transportation fixtures"** is used to describe an entity that is capable of both loading and unloading transportation fixtures. Thus, slightly different terms are used in the description and in claim 12 (Guidelines III-4.3 PCT).
- 2.) Claim 2 appears to be superfluous, since the features comprised therein are already comprised in claim 1, on which claim 2 depends.
- 3.) The application comprises 2 independent method claims and 2 independent device claims, which each repeat a lot of the wording of the other independent claim in the same category. Thus, the application is not concise according to Article 6 PCT.

MEISSNER &amp; MEISSNER, Postfach 350130, 14171 BERLIN

European Patent Office

D-80293 Munich

PATENTANWÄLTE  
MEISSNER, W., DIPL.-ING. (1980)  
MEISSNER, P. E., DIPL.-ING.  
PRESTING, H.-J., DIPL.-ING.  
HENZE, L., DIPL.-ING.  
Berlin  
In Kooperation mit:  
HEMMERICH & KOLLEGEN  
HEMMERICH, F.W. (bb 1995)  
VALENTIN, E., DIPL.-ING.  
GIHSKE, W., DIPL.-ING.  
GROSSE, D., DIPL.-ING.  
Siegen Düsseldorf

Ihr Zeichen

Ihr Schreiben vom

Unsere Zeichen

Hofenstraße 89  
14195 Berlin

M/Ky/73328

14.05.2001

PCT/EP00/04283  
Mannesmann AG

This is in response to the first written Opinion dated 12.02.2001.

After applicant's detailed reviewing the Report the applicant can follow up the opinion of the Examiner that it is necessary to amend some of the current claims. Therefore applicant submits a fair copy of a new complete set of claims 1 to 16. Claims 1, 10, 11 and 12 have been amended to comply with the Examination Report. The amended parts of these claims are underlined or crossed out to identify the added features and the features being dropped (one copy only). A clean copy is attached too. Filing the amended claims the applicant feels comply with the Examination Report.

It is to be noted that claim 10 was further amended to remove the limitation that the receiving and dispatching system be positioned at the dock area of the facility, in order to allow to amend claim 11 as shown in the amendments. All in all the applicant is of the opinion that the amendments requested with the attached claims generally will track the recommendations of the International Preliminary Examination Report.

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The International Preliminary Examination Authority is requested to establish the international preliminary examination report on the basis of the new set of claims as attached herewith, recognizing novelty, inventive step and industrial applicability of the invention.

Dipl.-Ing. Peter E. Meissner  
Patentanwalt

Encl.

**Claim Amendments in response to the Written Opinion dated February 12, 2001**

1. A postal processing facility including a sorting system that receives mail in trays and sorts mail to trays and a dock area including a plurality of transportation docks that provide interface with transportation vehicles, comprising:

a receiving and dispatching system (34) having at least one receiving and dispatching assembly (44) that loads trays of sorted mail from a sorting system to transportation fixtures and unloads trays of mail to be sorted from transportation fixtures to the sorting system; and

wherein said receiving and dispatching system (34) is at the dock area of the postal processing facility thereby providing substantially direct movement of fixtures between transportation vehicles (26) and said receiving and dispatching system (34).

2. The postal processing facility of claim 1 wherein said receiving and dispatching system (34) includes at least one receiving and dispatching assembly (44) that is adapted to both unload transportation fixtures and load transportation fixtures.

3. The postal processing facility of claim 2 including a plurality of said receiving and dispatching assemblies (34), a sortation conveyor (38) having a main line (40) defined by a conveying surface and a plurality of spurs (42), extending from said main line (40) to said receiving and dispatching assemblies (44).

4. The postal processing facility of claim 3 wherein said spurs (42) include separate spur lines for moving trays from said sortation conveyor (38) to the receiving and dispatching assemblies (44) and for moving trays from said receiving and dispatching assemblies (44) to said sortation conveyor (38).

5. The postal processing facility of claim 3 wherein said conveying surface is a continuous loop (Fig.5).

6. The postal processing facility of claim 3 wherein said conveying surface is elevated with respect to said receiving and dispatching assemblies (44).

7. The postal processing facility of claim 3 including individual enclosures around said receiving and dispatching assemblies (44) with a moveable gate (56) that can be selectively

- 2 -

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opened to allow other transportation fixtures in other receiving and dispatching assemblies (44) to be loaded or unloaded while one transportation fixture is being removed.

8. The postal processing facility of claim 1 wherein said transportation fixtures are wheeled carts.

9. A postal processing facility including a sorting system that receives mail in trays and sorts mail to trays, comprising:

a receiving and dispatching system (34) that loads trays of sorted mail from a sorting system to transportation fixtures and unloads trays of mail to be sorted from transportation fixtures to the sorting system; and

wherein said receiving and dispatching system (34) includes at least one receiving and dispatching assembly (44) that is adapted to both unload transportation fixtures and load transportation fixtures.

10. In a postal processing facility (20) including a sorting system that receives mail in trays and sorts mail to trays and a dock area including a plurality of transportation docks that provide interface with transportation vehicles (26), a method of receiving trays of mail from transportation fixtures and dispatching trays of mail to transportation fixtures, comprising:

providing a receiving and dispatching system (34) having at least one receiving and dispatching assembly (44) that is operable to load trays of sorted mail from a sorting system to transportation fixtures and unload trays of mail to be sorted from transportation fixtures to the sorting system]; and

substantially directly moving fixtures between transportation vehicles (26) and said receiving and dispatching system (34).

11. The method of receiving and dispatching trays in claim 10 including positioning said receiving and dispatching system (34) at said dock area.

11. The method of receiving and dispatching trays in claim 10 including positioning said

11. The method of receiving and dispatching trays in claim 10 including positioning said receiving and dispatching system (34) at said dock area.

12. In a postal processing facility including a sorting system that receives mail in trays and sorts mail to trays, a method of receiving trays of mail from transportation fixtures and dispatching trays of mail to transportation fixtures, comprising:

providing a receiving and dispatching system (34)

loading trays of sorted mail from a sorting system (34) to transportation fixtures and unloading trays of mail to be sorted from transportation fixtures to the sorting machine (32); and

wherein said loading and unloading include commonly loading and unloading with a common receiving and dispatching assembly (44).

13. The method of receiving and dispatching in claim 12 including providing a receiving and dispatching system (34) having a transport mechanism (50) adapted to load trays of mail to transportation fixtures and unload trays of mail from the transportation fixtures.

14. The method of receiving and dispatching in claim 13 including providing a plurality of said transport mechanisms (50).

15. The method of receiving and dispatching in claim 14 including loading trays of mail to transportation fixtures with ones of said transport mechanism (50) and unloading trays of mail from the transportation fixtures with others of said transport mechanisms (50).

16. The method of receiving and dispatching in claim 14 including loading trays of mail to transportation fixtures and unloading trays of mail from transportation fixtures with substantially all of said transport mechanisms (50).

selectively opened to allow other transportation fixtures in other receiving and dispatching assemblies to be loaded or unloaded while one transportation fixture is being removed.

- 5 8. The postal processing facility of claim 1 wherein said transportation fixtures are wheeled carts.
9. A postal processing facility including a sorting system that receives mail in trays and sorts mail to trays, comprising:  
10 a receiving and dispatching system that loads trays of sorted mail from a sorting system to transportation fixtures and unloads trays of mail to be sorted from transportation fixtures to the sorting system; and wherein said receiving and dispatching system includes at least one receiving and dispatching assembly that is adapted to both unload transportation fixtures and load transportation fixtures.  
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10. In a postal processing facility including a sorting system that receives mail in trays and sorts mail to trays and a dock area including a plurality of transportation docks that provide interface with transportation vehicles, a method of receiving trays of mail from transportation fixtures and dispatching trays of  
20 mail to transportation fixtures, comprising:  
providing at least one of a dispatching system that loads trays of sorted mail from a sorting system to transportation fixtures and a receiving system that unloads trays of mail to be sorted from transportation fixtures to the sorting system;  
positioning said at least one of a receiving and dispatching system at the dock  
25 area of the postal processing facility; and substantially directly moving fixtures between transportation vehicles and said at least one of a receiving and dispatching system.
11. The method of receiving and dispatching trays in claim 10 including providing a  
30 dispatching system and a receiving system and positioning both said receiving and said dispatching system at said dock area.



12. In a postal processing facility including a sorting system that receives mail in trays and sorts mail to trays, a method of receiving trays of mail from transportation fixtures and dispatching trays of mail to transportation fixtures, comprising:
- 5       providing a receiving and dispatching system;  
      loading trays of sorted mail from a sorting system to transportation fixtures and unloading trays of mail to be sorted from transportation fixtures to the sorting machine; and  
      wherein said loading and unloading include commonly loading and unloading  
10       with a common system.
13. The method of receiving and dispatching in claim 12 including providing a receiving and dispatching system having a transport mechanism adapted to load  
15       trays of mail to transportation fixtures and unload trays of mail from the transportation fixtures.
14. The method of receiving and dispatching in claim 13 including providing a plurality of said transport mechanisms.
- 20   15. The method of receiving and dispatching in claim 14 including loading trays of mail to transportation fixtures with ones of said transport mechanism and unloading trays of mail from the transportation fixtures with others of said transport mechanisms.
- 25   16. The method of receiving and dispatching in claim 14 including loading trays of mail to transportation fixtures and unloading trays of mail from transportation fixtures with substantially all of said transport mechanisms.